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TACTICAL NUCLEAR WARFARE STUDIES

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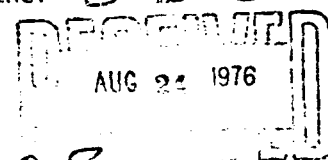
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[REDACTED] the development of U.S. tactical nuclear weapons employment and requirements procedures are discussed in detail in Chapter II of this report.

2. Soviet Concepts of Theater Nuclear Warfare

[REDACTED] The image of theater nuclear war that is presented in the Soviet literature is dominated by the massive, in-depth, surprise first use of nuclear weapons and consequent wide zones of contamination, fires, floods, and destruction involving great expenditures of material and massive losses of troops. The U.S./NATO threat, as perceived by the Soviets, appears to have had a strong influence on their view of theater nuclear war.

[REDACTED] The Soviet theater attack, should war develop, is not presented as just an initial nuclear strike. It is a coordinated, combined attack designed to seize and hold territory that is led with a mass nuclear strike. All forces have a role in regard to all targets; for example, the counter-nuclear role of conventional forces is important in the same sense that the counternuclear role of the initial nuclear strike is important.

[REDACTED] The Soviet approach to theater nuclear war is oriented more towards offensive than defensive operations. Their principal objective in this regard is to seize and hold territory. This objective is to be achieved by the initial massive application of firepower throughout the depth of the defense, closely followed by a high-rate-of-advance exploitation. Since the Soviets are fully aware that nuclear weapons are capable of inflicting instantaneous mass destruction on the enemy (and themselves), the initial nuclear strikes are intended to destroy the strongest points throughout the depths of the enemy defense and to create favorable conditions for exploitation by ground forces. The timing of the nuclear strike and coordination with ground forces is of overriding importance.

[REDACTED]

The exploitation appears to be made up of mainly conventional forces that are closely coordinated with the nuclear strike. The primary mission of the attacking forces is the rapid exploitation of the nuclear strikes, the completion of the smashing of the surviving enemy forces and the seizure of specific positions, areas and objectives. The most important forces in this regard are the mechanized ground forces. However, a major role for airborne assault battalions is also planned for the exploitation.

The Soviet offensive, highly preplanned and precisely timed, has inherent problems and, potentially, severe vulnerabilities. Major problem areas pertain to target acquisition, timing and command/control. Potentially vulnerable elements in the offensive are the troops themselves, command and control capabilities, and the mobility of second echelon and reserve units so important to the exploitation phase.

A more detailed discussion of these matters appears as Chapter III of this report.

D. PRELIMINARY CONCLUSIONS

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

3. [REDACTED] THE SOVIETS ARE CONCERNED ABOUT SEVERAL POTENTIAL WEAKNESSES IN THEIR HIGHLY ORCHESTRATED CONCEPT OF THEATER NUCLEAR WARFARE OPERATIONS, PARTICULARLY IN THE AREAS OF TARGET ACQUISITION, ATTACK COORDINATION, AND MAINTENANCE OF COMMAND AND CONTROL.

[REDACTED] The Soviet concept of theater nuclear operations appears to involve a rapidly moving attack in which all elements of the force have precise missions that are to be carried out on a tight timetable. Under these circumstances, it is likely that weaknesses may exist or can be created by the delay or disruption of key elements of the force, or by a Soviet failure to acquire and destroy critical elements of the NATO/U.S. defense.

4. [REDACTED] THE SOVIET STRATEGY FOR THEATER NUCLEAR WAR IS POTENTIALLY VULNERABLE NOT ONLY TO DIRECT DESTRUCTION OF THE ATTACKING SOVIET GROUND TROOPS, BUT, MORE IMPORTANTLY, TO DISRUPTION OF COMMAND AND CONTROL CAPABILITIES AND TO IMPAIRMENT OF THE MOBILITY OF THE SECOND-ECHELON AND RESERVE TROOPS THAT ARE CRITICALLY NECESSARY TO THE EXPLOITATION PHASE OF THE SOVIET ATTACK.

[REDACTED] The Soviet offensive is highly preplanned, precisely timed, and tightly controlled. Command and control capabilities that appear to be an integral part of the Soviet approach are highly

[REDACTED]

vulnerable to nuclear weapons effects, and the hostile battlefield environment anticipated during nuclear warfare may well disable a significant portion of these capabilities. Because of the precise timing demanded by the Soviet plan of operations, the susceptibility of second-echelon and reserve forces to delay and mobility impairment may be considerably more important than their vulnerability to outright destruction. These are both important areas for possible NATO disruption of Soviet attack plans.

5. [REDACTED] TO IMPROVE THE U.S. CAPABILITY TO DEFEAT A LARGE-SCALE SOVIET ATTACK, [REDACTED] IS IMPORTANT TO SEEK ALTERNATIVE WAYS OF DEFEATING THE SOVIET ATTACK STRATEGY ITSELF, AS OPPOSED TO FOCUSING ON THE IMMEDIATE DESTRUCTION OF THE ATTACKING TROOPS AND THEIR NUCLEAR SUPPORT.

[REDACTED]

[REDACTED]

II. DEVELOPMENT OF U.S. TACTICAL NUCLEAR WEAPONS EMPLOYMENT AND REQUIREMENTS PROCEDURES

[REDACTED] In the 1947-1954 time frame, a number of studies were performed to analyze the effects of atomic weapons on military weapons requirements and tactics. Topics considered in these studies included qualitative discussions on the limitations and capabilities of atomic weapons, analyses of major situations in World War II and the Korean War where the employment of the atomic bomb would have been tactically useful. Comprehensive analyses of NATO/Soviet Union force postures and the number of nuclear weapons required by NATO for the defense of Central Europe against Soviet attack were also carried out.

[REDACTED] In addition to the analyses of the tactical utility of atomic weapons and weapons requirements, Army and Air Force targeting doctrine was revised at an early date to reflect the incorporation of atomic weapons into the U.S. family of weapons. The revised targeting doctrine designated certain targets as priority atomic (or nuclear) targets and specified the damage criteria to be used for their destruction. (The revised Army Field Manuals also discuss battlefield tactics to be employed when the enemy had a nuclear weapon capability.)

[REDACTED] After reviewing the early studies and military field manuals, one can conclude that U.S. methodology for tactical nuclear weapons employment and requirements studies were basically established prior to the mid-1950s, with remarkably little change since that time. Past and present U.S. TNW studies were reviewed--first to identify the origin of key concepts, implicit assumptions and biases in the weapons employment and requirement procedures; and second, to determine the rationale behind designating certain targets as priority targets and to determine how weapon damage criteria have been related to the denial of enemy objectives. The overall purpose of the

[REDACTED]

examination was to identify critical elements in the approach to tactical nuclear weapons employment and requirement determinations that may be unduly biased by past perceptions of nuclear warfare and to suggest alternative techniques that may enhance the capability of the current approach to achieve U.S. and NATO objectives. The evolution of U.S. tactical nuclear weapons procedures, the current approach to tactical nuclear weapons applications procedures, areas in procedures that have not changed since the early 1950s, reasons why they have not changed and possible opportunities for change are discussed below.

A. EVOLUTION OF EMPLOYMENT AND REQUIREMENTS PROCEDURES

[REDACTED] The results of the U.S. Strategic Bombing Survey [Refs. 1 and 2], published in 1946, demonstrated unquestionably the destructive power of the atomic weapon and at the same time raised serious questions about the potential impact of atomic weapons on military requirements and tactics. One of the first studies of the impact of atomic weapons on military requirements and tactics was performed by the U.S. War Department in the 1946-1947 time frame [Ref. 3].

[REDACTED] The War Department study established several basic points relative to atomic weapons and military requirements. These points were based primarily on the perceptions of the capabilities and, more importantly, the limitations of the atomic weapons that existed at the time of the study. Because of the influence of these perceptions and basic points on the studies that followed and on the atomic weapon employment doctrine that evolved, it is of importance to discuss them briefly.

[REDACTED] The capabilities of the atomic weapon were clearly demonstrated at Hiroshima and Nagasaki, where the destruction covered 3-1/2 and 7 square miles, respectively. Casualties at Hiroshima were estimated at 70,000 - 80,000 killed and a like number injured and, at Nagasaki, 35,000-40,000 were killed and another 35,000-40,000 injured. In addition to its destructive capabilities, however, the limitations of the atomic weapons were also noted,

[REDACTED]

The atomic bomb is not an all purpose weapon; in fact, it is rather narrowly limited in its employment due to its great destructive power (which is not significantly reducible at present), and its relative high cost as a single weapon. In a restricted sense, it is just another bomb, particularly suited for purposes of destruction of major targets, such as cities, industrial concentrations and major military targets. In a broader and more accurate sense, it is "a decision in a package," providing a means of wiping out large segments of civilization. [Ref. 3, p. 65]

[REDACTED] At the same time, the development of the atomic bomb and the means of delivering it was seen as having an important effect on military force requirements. In the past the mission for peacetime forces was to provide a framework for wartime expansion behind light covering forces. The capability of the atomic weapon to inflict instantaneous mass destruction on selected targets called for

...forces in being capable of providing instantaneous defense against air attacks or surface forays against us, of minimizing the effects of such attacks, and of concurrently launching counterattacks against vital enemy targets...[Ref. 3, p. 75]

These "forces in being" were to play (for the most part) a defensive role, if only to guarantee the ultimate ability to take the offensive,

We require, in the first instance, defensive forces capable of intercepting and destroying aircraft and/or guided missiles. Such forces include both intercepting aircraft and ground weapons, utilizing special air-to-air and ground-to-air missiles. [Ref. 3, p. 75]

[REDACTED] The objectives of the forces in being in carrying out their defensive role were also specified by the War Department, with emphasis placed on resource destruction and military operations to blunt the offensive.

The objective of the defense can only be reduction of the effects of the attack and infliction of such heavy damage on the attacking forces as to destroy the enemy's resources available for continuation of such attacks. [Ref. 3, p. 76]

Forces in being will have the additional mission of quickly reinforcing or seizing essential bases, and of undertaking such timely military operations as will blunt the hostile offensive...[Ref. 3, p. 77]

[REDACTED]

A basic characteristic of the forces in being was that they be highly mobile in order to keep their numbers reasonably low. To support this relatively small force,

...we must effect substantial stockpiling. The equipment and supplies of our forces in being, particularly our atomic weapons with their carrying vehicles, must be stockpiled... [Ref. 3, p. 82]

Strategic bombing, which was considered to have played a decisive role in the outcome of World War II, was also to occupy an important role in the evolving strategy for atomic warfare. Strategic bombing missions in atomic warfare were to be carried out by either piloted aircraft or by guided missiles striking targets deep within enemy territory. In this role, aircraft and missiles were viewed as the single most important element of U.S. military capabilities.

Thus, by 1947, a broad combat role for the atomic weapon had been defined and the weapon itself had engendered a requirement for modifying the U.S. force structure. The atomic bomb, limited in its employment because of its great destructive power, was to be employed for the destruction of major military targets and resources. Highly mobile forces in being with a primarily defensive role and stockpiling of atomic weapons systems to support these forces were required. Also, strategic bombing was of overriding importance to the strategy for atomic warfare. But what was the contemplated effect of atomic weapons on military tactics? Again, from Reference 3, p. 84,

Military tactics are relatively unaffected by the advent of the atomic bomb. Until it has been demonstrated that the atomic bomb can achieve a decision by itself (and the certainty that it can has yet to be demonstrated) conventional military operations will continue to be employed, using, for some time to come, substantially the tactics of the end of World War II, characterized by constantly increasing speed of movement and more concentrated power.

As seen from the preceding discussion, the War Department, in 1947, based on its perceptions of the capabilities and limitations of atomic weapons, established the following important basic points related to atomic

[REDACTED]

weapons effects on military requirements: the atomic bomb is particularly suited for the destruction of major targets; forces in being with stockpiled atomic weapon systems for their support are required; strategic bombing is of importance to the strategy for atomic warfare; and, military tactics are relatively unaffected by the atomic weapon. Basic points such as these, products of analyses of the qualitative aspects of atomic weapons and military requirements, provided the background and implicit guidance for the quantitative analyses of the tactical employment of atomic weapons and atomic weapons requirements that followed over the next 5 to 10 years.

[REDACTED] With the broad military role of the atomic weapon defined, a requirement existed to determine what targets were prime targets for attack with atomic weapons, and a number of studies were performed to satisfy this requirement. In selecting prime targets for atomic weapons, most of the initial studies reexamined tactical situations in World War II. The purpose of reexamining situations in World War II was to determine if actual tactical situations has existed in which the atomic weapon, as a replacement for conventional weapon strikes could have had a decisive impact on the outcome of the conflict while using fewer weapons than actually employed and minimizing casualties to friendly forces. Stated more generally, the purpose was to determine if the atomic weapon could have a role in the tactical support of forces beyond its strategic bombing role.

[REDACTED] In analyzing the tactical situations in World War II appropriate to atomic weapons, targets were sought that would not waste the effects of the weapon. The atomic weapon was a weapon with capability of destroying large area targets and, therefore, past situations in which such targets had existed were sought. These targets were, in general, major concentrations of personnel and materiel.

[REDACTED] For example, in Reference 4, the battle at Caen was reexamined with regard to atomic weapons. During the night of 7-8 August 1944, the Canadian and British infantry in close columns of tanks and armored vehicles breached the German defense lines South of Caen. The front was 2.2 miles in length

[REDACTED]

and the depth was 1,700 ft. A total of 15,274 men and 1,742 vehicles, tracked nose to tail with 2- to 3-yd separation, were involved. The analysis of Reference 4 indicates that although one 40-kt burst could not effectively destroy the target, three 1-kt air bursts over the vehicles could have caused severe damage to all the vehicles and inflicted a lethal radiation dose to all the associated personnel. The principal conclusion of the study was that large concentrations of armor are profitable targets for atomic weapons.

[REDACTED] In the battle of St. Lo, a battle decisive in the larger battle of Normandy (July 1944), 5,200 tons of bombs were dropped in an area of approximately 2,500 by 7,000 yd. The analysis of Reference 5 indicates that two atomic weapons could have supplied the same destructive force as the carpet bombing in this ground-support role. Other situations analyzed in Reference 5 include the battles at Cassino, Iwo Jima, Crete and Okinawa. In all the situations analyzed, atomic weapons, as a replacement for conventional weapons strikes, could have had a decisive impact on the outcome of the battle, with a significant reduction in friendly personnel casualties and equipment loss.

[REDACTED] Additional World War II situations were analyzed with regard to atomic weapons in References 6 through 10. In each analysis, primary targets for atomic weapons were found to be either forward-area targets, such as concentrations of troops in the open, troops effecting a rapid breakthrough, troops attempting river crossings, or rear-area targets such as aircraft bases, marshalling yards, supply depots and POL storage sites, to list just a few. Also of interest was the analysis, reported in Reference 10, of the standard combat procedures of the U.S. and U.S.S.R. armies in World War II. The standard tactical deployment of either U.S. or Soviet field forces would make them vulnerable to attack by atomic weapons, a result that could be expected based on the conclusions of the World War II situational analyses.

[REDACTED] Perhaps the most thorough reexamination of previous tactical situations with regard to atomic weapons dealt with the Korean War, Reference 11. The purpose of this study was to analyze the employment of atomic weapons in

[REDACTED]

the tactical support of ground forces in the field using Korea and the Korean campaign as a laboratory and laboratory material to add more realism to the previous studies of World War II that were, as stated in Reference 11, purely hypothetical. Unlike the previous studies on World War II, which simply matched target and weapons effects areas to determine the tactical utility of the atomic weapon, this study addressed the question of whether or not the atomic weapon could be used to advantage in Korea.

A basic assumption in Reference 11 was that the atomic weapon is a weapon for the massive destruction of area targets. The principal attributes of the weapons were noted to be its suddenness and the large area of the effect. Personnel were chosen as the prime targets for the tactical employment of atomic weapons with materiel damage considered as a bonus.

[REDACTED]

[REDACTED]

[REDACTED]

Hence, by late 1950, the specific role of atomic weapons in military operations had been defined and the major targets suitable for attack by atomic weapons and criteria for target destruction had been determined. Also, methods for determining atomic weapons requirements were in the initial stages of development. Remaining gaps in the development of tactical atomic weapon applications included determining the family of atomic weapons required by the Services and procedures for their use in wartime.

In an effort to fill in these gaps, several large-scale and comprehensive studies were performed during the 1950-1954 time frame. The results of Project MAID, [Ref. 10], indicated that 13 different types of atomic weapons were possible for development by 1960. The atomic target list was extended to include 54 different types of targets, with personnel targets emphasized as the priority atomic target. Also, as a result of the perceived nature of the future Soviet threat and the likely theater of operations, recommendations were made for the development of atomic field artillery and for the development of guided missiles, equipped with atomic warheads, with accuracies close to 200-300 ft at ranges between 20 and 150 miles. This study, however, did not address the problem of the number of weapons required by the Services.

Numerical requirements for atomic weapons and the impact of the weapons on organizational procedures were analyzed in detail during Project VISTA [Ref. 13] and during Project ATTACK [Ref. 14]. Both of these studies had as a primary objective the determination of the atomic weapons requirements for the defense of Central Europe against Soviet attack and, in many

[REDACTED]

atomic weapon to his mission and his plan of battle. Thus, early in Project ATACU, it appeared that, in assessing the tactical utility of atomic weapons and in determining the number of weapons required by the services, emphasis should no longer be placed on the substantial destruction of personnel and materiel; emphasis was to be placed on satisfying the objectives of the battle plan.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED] the Soviet Union has an atomic weapon capability and will use the capability in initial attacks;
- [REDACTED] the geographic locations of the initial Soviet assault are known;
- [REDACTED] atomic weapon release and allocation are complete (no political constraints);
- [REDACTED] the weapon yield required to produce given level of casualties or materiel damage is fairly well known;

[REDACTED]

[REDACTED] With the methodology and assumptions mentioned above, the numbers of atomic weapons and their yields required to defeat a Soviet attack on

[REDACTED]

[REDACTED]

central Europe were determined, and, as extracted from Reference 14, are shown in Table 5. As shown in Table 5, not only are the basic target types listed, but also the priority of attack of these targets is designated and the number of atomic weapons required for the successful NATO defense against the Soviet attack is indicated.

[REDACTED]

[REDACTED]

[REDACTED]

In summary, by 1954 the role that atomic weapons would play in the U.S. theater nuclear force posture for the mid- to late 1950s had been determined. The military forces were to be forces in being with atomic weapons stockpiled for their support and planned strategic bombing of major targets deep in enemy territory was planned to be of major importance to the overall atomic warfare strategy, a view that was, in effect, a carry-over from World War II perceptions of war as total war. Major types of military targets suitable for destruction by atomic weapons had been determined through extensive analyses of previous tactical situations in World War II and Korea. The problem of relating enemy casualties and materiel damage to military effectiveness had been discussed at length, but, with no field data on tactical atomic operations, World War II practices were employed to supply the required relationships. In determining weapons requirements for the Services, most of the accompanying major operational and technological problems were addressed and many suggestions for their solution were offered. Finally, atomic weapons employment and requirements procedures, admittedly in their embryonic stages, were advanced for initial use and future development by the end of 1954.

B. CURRENT APPROACH

[REDACTED] From the discussion presented above, it can be seen that the broad role for atomic weapons in military applications and procedures for weapons employment and requirements determination were established within a date after the end of World War II. Also, the defined role of atomic weapons and

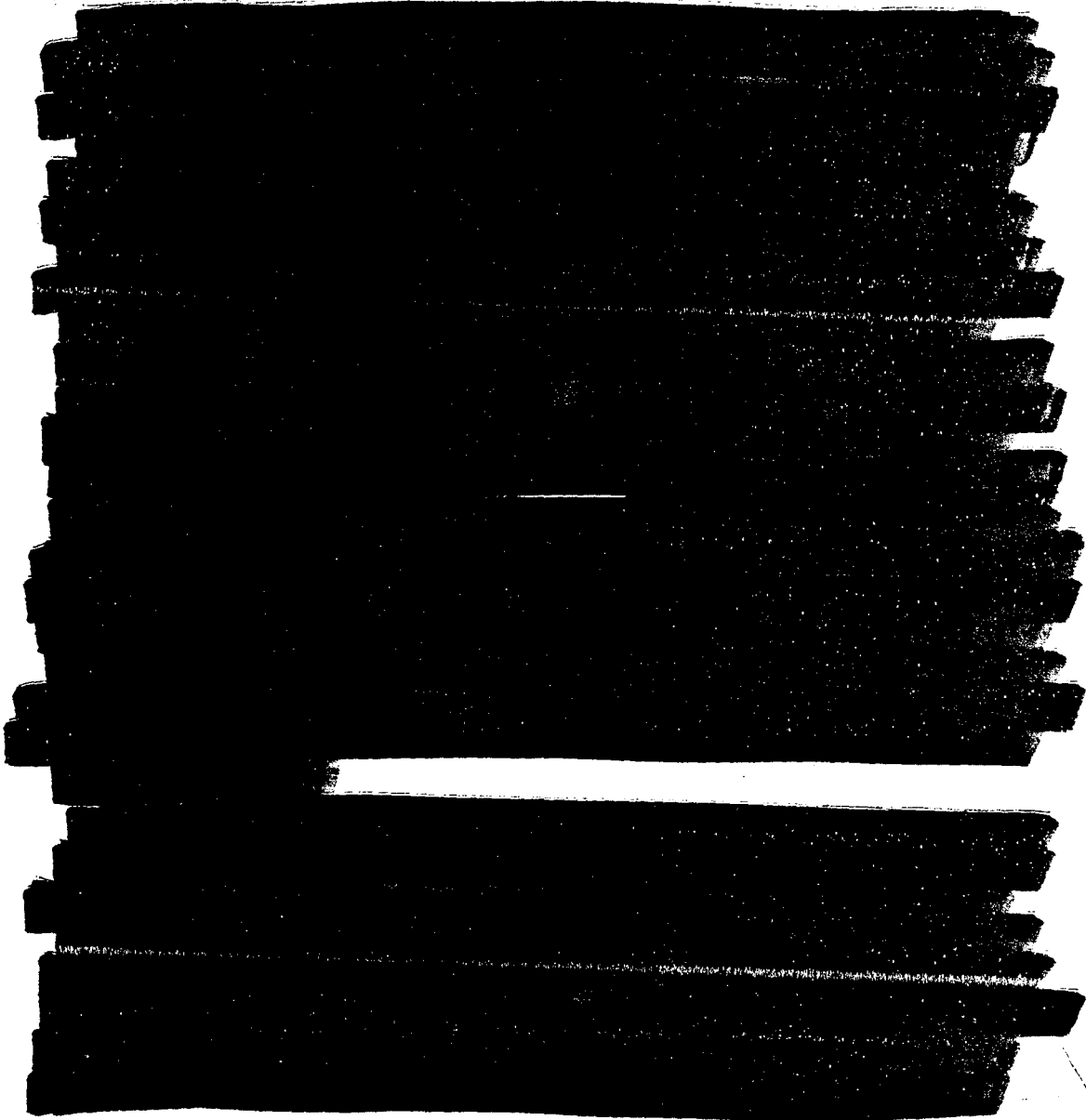
[REDACTED]

the procedures that were developed early appear to be based logically (to a large extent) on the military thoughts and practices that were generally accepted shortly after World War II. Since that time many changes in U.S. force policy and advances in U.S. weapons systems technology have occurred. It seems reasonable, then, to examine the current U.S. approach to nuclear weapons applications and the role of theater nuclear weapons in the military force posture to see if the employment and requirements procedures have developed sufficiently to satisfy present objectives.

[REDACTED]

[REDACTED]

[REDACTED]



It is interesting to compare the 1975 role of the theater nuclear forces with the role planned for the atomic forces in 1947. See Paragraph 2 on Page 22.

[REDACTED]

[REDACTED]

See also the discussion on pages 36 and 39 of the 1954 role of atomic weapons in the defense of Central Europe. The resemblance between the concepts of 1954 and 1975 is, indeed, striking.

[REDACTED]

TABLE 7

PRIME ARMY GROUND TARGETS FOR TACTICAL NUCLEAR WEAPONS
(Listed in order of probable frequency of attack,
considering capability to acquire the target)

First-Echelon Maneuver Battalions^a
Second-Echelon Maneuver Battalions and Reserves^a
Conventional Artillery
Field Command and Communications Centers
Air Defense Units
Forward Logistics (Trains Areas)
Landing Fields and Parked Aircraft
Nuclear Delivery Missiles and Rockets
Transportation Network (Railroads, Bridges, etc.)
Supply Depots

^aApproximately 50-75% of the nuclear weapons delivered are likely to be expended against these targets.

[REDACTED]

[REDACTED]

The relation between targets destroyed and denial of enemy mission accomplishment has traditionally received only limited consideration except at the tactical level, and then extrapolated upwards. That is, kill companies to stop the battalion, kill battalions to stop the division, kill divisions to stop the Army, and so forth. The approach to denial of enemy mission accomplishment has been focused almost exclusively on the basic traditional targets and on the number of them that must be destroyed to stop the attack.

[REDACTED]


[REDACTED]

[REDACTED]


[REDACTED]


[REDACTED]


From the preceding discussion, it would appear that the reason things have not changed is that the assumptions, inputs and methodology have not changed. The logical questions are then, "Should things change, and, if so, why?" A key step in answering this question would appear to be a more comprehensive, in-depth characterization of the Soviet threat. This should include analyses of Soviet strategy, operational concepts and objectives, and identification of systemic vulnerabilities that NATO forces can exploit. Initial efforts towards achieving this goal are discussed in the following section.



III. SOVIET CONCEPT OF THEATER NUCLEAR WARFARE

 The initial assessments of the U.S. theater nuclear force posture in Europe, as presented in Reference 18, have identified two major roles, resource destruction and objective denial, for the forces in order to achieve the overall U.S./NATO goal of deterrence. The traditional role of resource destruction by nuclear weapons was defined by the early 1950s and nuclear weapons requirements and employment procedures were designed to support it. Also, as seen in the previous section, the role currently being considered for our theater nuclear forces is remarkably similar to the role defined by the early 1950s, i.e., achievement of goals by destroying major targets or resources. It is this role that appears to have greatly influenced Soviet theater nuclear doctrine.

 Using the theater nuclear forces in the objective denial role has received only limited attention, partially because most intelligence and requirements studies focus on the target array-order of battle type of analysis with little attention being given to the strategic rationale behind the targets. Based on Soviet literature on theater nuclear war, however, there appear to be major opportunities to analyze Soviet operational concepts and identify vulnerabilities that U.S./NATO theater nuclear forces can exploit in an objective denial role.

 Preliminary results of an analysis of Soviet theater nuclear war concepts are presented in this section. These results include a description of the Soviet approach to theater nuclear war and a discussion of the major weaknesses and vulnerabilities in the approach from the Soviet point of view. Much of the material used in this analysis can be found in *Tactics, Operational Art and Tactics*, and *The Offensive*, (short titles); see References 20, 21 and 22, respectively. The reader is referred to these references for

[REDACTED]

more detailed discussions of Soviet concepts. Also, a recent report entitled *The Soviet Theater Nuclear Offensive*, [Ref. 23], contains a more detailed analysis of the perceived threat and concepts of operations than is contained herein and should be consulted if additional information is desired.

A. SOVIET CONCEPTS OF OPERATIONS

[REDACTED] Several major themes dominate the Soviet literature and appear to constitute the underpinnings of the Soviet approach to theater nuclear war. These themes are the revolutionary nature of the change brought about by the mass introduction of nuclear weapons, the overriding importance of surprise and striking first and the destructive nature of the battlefield environment. These major themes appear to provide the basis for the Soviet image of theater nuclear war and the concept of operations developed to fight such a war.

[REDACTED] The principal image of theater nuclear war that is presented is dominated by the mass first use of nuclear weapons and consequent wide zones of destruction, contamination, destructive fires, and floods involving great expenditures of material and massive losses of troops and equipment. Surprise is very important in the Soviet view, particularly insofar as preempting to "beat the enemy to the draw" when a nuclear strike by the enemy is *anticipated*. All efforts, including misinformation, would be expended to camouflage any preparation for the attack. It is concluded that should the Soviets attack, it would be prior to any significant mobilization. Mobilization would be avoided because it might signal Soviet intentions to attack, thus giving NATO time to undertake defensive measures or launch an attack itself.

[REDACTED] The concept of operations for the Soviet theater nuclear forces, based on the major themes and perceptions discussed above, is laid out in general in References 20, 21 and 22, and these documents should be referred to directly for a complete description. The material that follows is intended to extract only selected portions that appear relevant to how the

[REDACTED]

Soviets combine nuclear and conventional capabilities and to considerations regarding the feasibility, practicability or vulnerability of the concept of operations they have identified.

1. Initial Disposition

[REDACTED] In the Soviet studies of *the general evolution* of the basic principles of offensive operations prior to the introduction of nuclear weapons, several points stand out. First, the necessity for the simultaneous neutralization of the enemy defense through the entire depth of its organization is not considered new; rather, it is a basic principle that was disclosed in World War I, nuclear weapons just make it more possible. Second, only a decisive offensive conducted at high rates and to a great depth achieves the complete smashing of the enemy in short times and the seizure of important areas, objectives, and political and economic centers. This is viewed as the way to maximize gains at minimum cost. Third, the massing of forces and means on the main axes of attack is the most important and inviolable principle of the offensive. Where this principle is violated, the offensive is usually unsuccessful. Fourth, in essence, operations for encirclement comprise the basis of the offensive operations of the Soviet Army. And, finally, the basic method of destroying the enemy is the rapid dismemberment of the encircled force into isolated groups while still in the course of the encirclement and their destruction in detail.

[REDACTED] These basic concepts are carried over and recast in the nuclear engagement, with the only real difference being that while massing was previously attained through the creation of a many-fold superiority over the enemy in infantry, tanks and artillery, mass in the nuclear engagement is provided by the maneuver of nuclear strikes. Prior conventional superiority is no longer required for successful *attack*. What counts is superiority after the strike has had its effect. Accordingly, the force dispositions prior to, and for, initiating the nuclear attack--in terms of the use of assembly areas and the timing involved in creating a temporary force

[REDACTED]

concentration--are expected to be quite different from those required for conventional attack.

[REDACTED] Under conventional operations, the troops to provide the offensive shock force were assembled in a departure area some 25 to 30 km from the FEBA. Troops moved out of the departure area over several nights. Their disposition close to the enemy was comparatively safe because the defender did not possess the powerful means of destruction which could frustrate the effort even if preparation was detected.

[REDACTED] The requirement of massing forces for conventional attack has not changed. The question is, would they risk presenting such targets and associated warning if there were serious concern that the enemy would respond and preempt with nuclear strikes, limited or not? From the Soviet literature,

It became clear in the fifties that for a decisive defeat of the enemy in the chosen area it is not obligatory at all to concentrate on a limited space a large number of forces and means. For this purpose it is sufficient to concentrate the fire of powerful weapons disposed over a large area. This is even more beneficial in that the concentration of forces has become very dangerous due to the presence of the same powerful weapons in the enemy arsenal... A large concentration of troops will most often create a lucrative target for the enemy and may sooner lead to failure. [Ref. 21, p. 225]

[REDACTED] Comparable concentration or massing of forces if the attack is to be made nuclear, however, is both unnecessary and undesirable. "With the appearance of nuclear weapons, the capability arose to neutralize dependably and smash the enemy defense in short times without the preliminary concentration of large masses of artillery close to the enemy," [Ref. 22, p. 66] and without risking the loss of concentrated forces to nuclear strikes of the defender.

The complete motorization of the troops permitted moving the *podrazdeleniye* out quickly, launching an assault from the march, and exploiting the results of nuclear strikes swiftly. In addition, when the defender has nuclear weapons available the prolonged stay of the attacking troops at a short distance from the enemy became extremely

[REDACTED]

dangerous. All this also became an objective precondition for the appearance of a fundamentally new method for the troops to launch an attack of a prepared defense--from the march by moving out from a waiting area. [Ref. 22, p. 66]

The launching of an offensive from the march with the movement of the *podrazdeleniye* out from a waiting area is a fundamentally new method because it is employed at the very start of the offensive in the breakthrough of the enemy's prepared defense, which did not occur formerly. [Ref. 22, p. 67]

It is presently recognized in many armies that the launching of the offensive from the march corresponds to the greatest degree to the nature of offensive combat in nuclear war; therefore, this method is considered basic. [Ref. 22, p. 142]

To the extent that some concentration is required, this then becomes largely a question of timing.

...consequently, a concentration of effort on the most important axis under the new conditions is achieved by different means and methods [employment of nuclear weapons] than was done before.

In addition to this, the concentration of forces and means has taken on immeasurably greater importance in time than in space. Moreover, concentration in space now represents a great danger and can be done only for a short time, quickly, and resolutely. [Ref. 21, p. 226]

Thus, by the end of the fifties it became clear that success or defeat in a battle or operation from the first to the last days of a war will be determined not only by a superiority in forces and means over the enemy, but also by a high speed in the actions of troops and in employment of nuclear weapons, as well as by the intelligent use of time. [Ref. 21, p. 227]

[REDACTED] Force dispositions required for conventional attacks are quite different from those required for nuclear attack. Should preparation for a nuclear attack be undertaken, extreme measures would be taken to hide any and all preparations.

[REDACTED]

2. Attack

[REDACTED] As in the past, the attack is initiated with the massive application of firepower throughout the depth of the defense. However, this firepower now has two components--the nuclear strikes that "accomplish the most important missions of destroying the enemy main forces and objectives themselves," [Ref. 22, p. 119] and the firepower preparation which is conventional artillery fire and air strikes with the employment of conventional ammunition. These operate in complementary modes.

[REDACTED] Throughout the Soviet material there appears to be constant attention not to merge the nuclear strike with the normal application of firepower--fire preparation and fire support. These maintain a distinct conventional flavor. Their importance remains high and their missions similar to what they were before the introduction of nuclear weapons, subject to complementing and reinforcing the nuclear fires and, most important, supporting the exploitation.

[REDACTED] Although the nuclear strike should be delivered at the beginning of the preparatory fire in order to achieve surprise, this "...should not be a stereotype. Nuclear weapons can also be employed in the middle, at the end, or at any other period of the preparatory fire." [Ref. 22, p. 142]

[REDACTED] Following the nuclear strike, the primary mission of the attacking forces becomes the rapid exploitation of nuclear strikes, completion of the smashing of surviving enemy forces, and the seizure of specific positions, areas, and objectives. The actions of the troops on the battlefield are coordinated first of all with the nuclear strikes and are directed toward the exploitation of their results. That is, as indicated earlier, the ground forces, in effect, support or complete the work of the nuclear strike. Nuclear strikes, the destruction of enemy means of nuclear attack, and swift highly maneuverable actions with the exploitation of gaps, breaches, and intervals in the enemy combat formation form the basis of the attack of the motorized rifle and tank *podrazdeleniye* in modern battle.

[REDACTED]

[REDACTED] There appear to be three primary rationales that underlie the emphasis for very fast and immediate exploitation; all have appeared consistently throughout the Soviet literature examined. The first reason for rapid exploitation is to capitalize on the shock effect of the initial fire. Here, it is recognized that, even in conventional cases, the more quickly you can attack, the more you are able to make use of the confusion and initial psychological shock that results from massive fire preparation.

[REDACTED] The second rationale behind the importance of rapid exploitation is a simple question of survival: "...such a character of the attack creates unfavorable conditions for enemy employment of weapons of mass destruction. He cannot precisely determine the targets for delivery of nuclear strikes and is forced to move his means of tactical nuclear attack often." [Ref. 22, p. 148] And, as was stated in the 1960s,

In nuclear war, the combat activities of the troops will inevitably be distinguished by great activity, swiftness, and exceptionally high maneuverability, for only in such conditions will the results of their own nuclear strikes be used in full measure on one hand; on the other, the carrying out of similar strikes by the enemy will be made difficult. [Ref. 24, p. 31]

It follows that speed of action is one of the main conditions for defeating the enemy and for preserving one's own forces. [Ref. 25, p. 253]

Daring and decisive attack and swift and skillful maneuver will not only assure the defeat of the enemy but will be the best means of protection from his nuclear strikes. [Ref. 24, p. 144]

[REDACTED] Speed and coordination in the attack is essential for a third and, perhaps, less obvious reason, i.e., the Soviets recognize that the initial strike will not be completely successful. Hence, the first priority for all forces--conventional as well as nuclear--is to find and destroy the nuclear weapons that might be used against Soviet forces. The attack is a combined strike plus exploitation, with common objectives, of which the most important is destruction of the nuclear weapons. The exploitation is not only to build on the nuclear strike in taking land, but also in finding and

[REDACTED]

destroying the nuclear means of attack. And, the faster they do that, the fewer the number of weapons that can be used against them.

[REDACTED] This approach, in conjunction with surprise and deception, appears to constitute the major Soviet counter to the U.S./NATO use of battlefield nuclear weapons (i.e., primarily artillery, but also HONEST JOHN and LANCE).

[REDACTED] A final corollary advantage to moving quickly is the reduced time of exposure to radiation when transiting contaminated areas:

The importance of high tempos of attack under modern conditions rises still more because now a very important factor of the situation is radioactive contamination of the terrain. The higher the rate of attack, the less that troop personnel received radiation. [Ref. 21, p. 172]

3. Nuclear Strike Coordination

[REDACTED] Some type of coordination is required between the nuclear strike force and the conventional exploitation forces. In the case of U.S./NATO forces, as perceived by the Soviets, coordination appears to be received only in the form of warning. [Ref. 21] No comparable emphasis is found on the Soviet side--perhaps as a partial result of their emphasis on designing the attack to achieve surprise and the potential inconsistency between this and warning friendly troops, although a more likely reason may be that the need for warning is much less severe when the strikes are, for the most part, concentrated at the start of the attack and not during the attack. Alternatively, perhaps they simply do not believe warning is practical without unduly degrading one's capability to engage important transient targets.

[REDACTED] Warning and troop safety appear to be approached primarily by allocating to the nuclear forces time and space that the conventional forces are warned not to penetrate until a given hour, H-hour.

The nuclear safety line (*rubezh bezopasnogo udaleniya*) is crossed by attacking troops at a precisely designated time. On approaching it, personnel of motorized rifle

[REDACTED]

podrazdeleniya take cover in APCs, drivers close viewing slits, and the tank crews close hatches and observation instruments. [Ref. 22, p. 144]

...and at a designated time ("H") they break into the forward edge of the enemy's defense. [Ref. 22, p. 144]

This use of H-hour appears in several different books. For example:

The battalion commander, after making sure that the information about the enemy has been confirmed, ordered the chief of staff to calculate time expressed in terms of H-hour to celestial time and inform *podrazdeleniye* commanders of the time of attack, time of delivery of the nuclear strike, and time for passing the initial point. [Ref. 26, p. 110]

When it is used, it is used primarily to coordinate the exploitation to follow, not, in general, to merely "warn" the nearby troops.

[REDACTED] The only place that troop warnings appear to enter in is when the attack is at night and the thermal effects on vision are expected to extend to much greater distances. With regard to these special problems posed at night, to maximize the effectiveness of the casualty radius of light radiation while providing protection to their own troops,

There is an especially precise organization of troop warning about time of delivery of nuclear strikes in order to take timely steps necessary for protection against the blinding action of light radiation. [Ref. 22, p. 202]

[REDACTED] Thus, coordination between nuclear strikes and the conventional forces is almost wholly focused on exploiting the effects of the nuclear weapon and maximizing the speed with which the exploitation can occur.

4. Combined Arms Operations

[REDACTED] The combined armed forces appear to remain conventional in character but with their missions and desirable characteristics altered so as to allow them to perform their conventional roles in a nuclear environment.

[REDACTED]

...modern combat can be characterized as nuclear combat. Of course, this does not repudiate its combined arms character but only stresses the decisive role of nuclear weapons in battle and the special features of the battle itself which follow therefrom. The actions of the troops on the battlefield are coordinated first of all with the nuclear strikes and are directed toward the exploitation of their results. [Ref. 22, p. 41]

[REDACTED] As one examines the various roles that different forces (e.g., nuclear rocket, ground and airborne assault forces) play, it is clear that each is designed to use its particular strengths to the benefit of a total combined effort. All forces, nuclear and conventional, are combined in a complementary manner with common objectives.

The success of contemporary combat operations may be achieved only through the joint efforts of all forces and means participating in an operation or battle on the basis of their close and continuous interworking and fullest use of combat capabilities. [Ref. 21, p. 273]

[REDACTED] The overall objectives or targets of importance are the same for both the combined arms forces and for the nuclear strikes, where "strike" is used and considered as the application of a force. Thus, the first missions of the nuclear strikes are destruction of nuclear weapons, major force groupings, command/control points, and so forth. The primary missions of the combined armed forces are identical (i.e., strikes on the nuclear means of delivery, the forces, command/control points, and so forth) with each taking those parts of the set that it is most suited to take. Part of the revolution in combat has been a result of identifying the manner in which these two forces are used so that they complement one another to the maximum extent possible. In doing this, the basic qualities of the combined armed forces have not changed; indeed, those attributes previously considered important (e.g., mobility, combined arms character, speed, command/control, etc.) are still, if not more, important. What appears to have changed is the approach to planning and mission assignment.

[REDACTED]

Employment of nuclear weapons on the battlefield, the increased fire and maneuver capabilities of troops, and a change in the character of the offensive led to a substantial change in the content, depth, and form of assignment of the combat missions. [Ref. 22, pp. 79-80]

Qualities or characteristics of combined arms operations that have become of particular importance include resoluteness, capabilities for continuous and night operations, and speed.

One of the most important features of offensive combat in nuclear war will be its greater *resoluteness* than formerly. This character of the offensive is determined by the political content of a future war and the sharply increased combat capabilities of the troops. [Ref. 22, p. 57]

Under conditions of the employment of nuclear weapons, the attack will be characterized by extreme decisiveness, mobility, great spatial scope, high tempos, continuity of conduct day and night, unevenness of development, and rapid and abrupt changes in the situation. [Ref. 22, p. 221]

The offensive will be conducted continuously until the complete defeat of the enemy, day and night and in any weather; the actions of the troops at night will become a regular phenomenon. [Ref. 22, p. 57]

This increased emphasis on night operations is in accord with the regular trend:

...night actions of the tank and mechanized corps of the Soviet Army in offensive operations in 1943-1945 occupied up to 40% of the overall duration of their actions in the operational depth.

On the whole, the experience of the wars of the first half of the 20th century is evidence that the scales of the combat actions of the troops at night are continuously expanding and their significance is increasing. [Ref. 22, p. 35]

[REDACTED] To assist in the rapid exploitation, special emphasis is placed on the use of artillery to suppress antitank capabilities. Swiftens of the

[REDACTED]

attack is ensured by reliable suppression of the enemy, by rapid organization of passages in obstacles, and by the resolute and continuous advance of *podrazdeleniyu* right behind the bursts of shells from their own artillery. Guns and tanks assigned to conduct direct fire destroy enemy weapons which are observed, particularly antitank means, and destroy defensive structures on the forward edge and in the immediate depth of his defense.

[REDACTED] Also of importance in the exploitation is the role of airborne assault forces and their significance to the nuclear assault. This aspect of the exploitation forces is doubly important because of the short shrift generally accorded it in the Western literature, often to the extent of ignoring it completely. This, in spite of Soviet tendency to discuss them on a level practically equal to that of tanks and often in priority ahead of tanks.

The basic means for armed combat in land theaters in a future world war will be the nuclear weapon used primarily with operational-tactical missiles, and also frontal aviation (bombers, fighter bombers, and fighters). In addition, the Strategic Rocket Troops and long-range aviation will deliver nuclear strikes against important objectives in the zone of the offensive fronts. Airborne landings will be widely used. As before, tank units and formations will be used in mass concentration on the battlefield. The motorized infantry will be just as important, although it will not be the "queen of the battlefield" as in the past wars. [Ref. 27, p. 29]

The main role in solving the combat problems of an offensive operation will be played by operational-tactical rocket troops and frontal aviation using nuclear ammunition and also by tank, motorized infantry, and airborne troops. [Ref. 27, p. 292]

The use of aeromobile and airborne forces is an important direction in improving the methods of an offensive under present conditions. Being used in massed numbers after nuclear strikes, these forces are capable of playing the role of a unique echelon for developing the success, however, with the essential difference that they will carry out these missions simultaneously with completing the defeat of the first enemy operational echelon. [Ref. 28, pp. 146-147]

[REDACTED]

The armed helicopter may turn out to be a means of fundamental change in the nature of ground combat. [Ref. 28, p. 184]

In a war involving the wide employment of nuclear weapons, airborne landings will play a very important role in the form of "airborne infantry."

Tank troops, with their high tactical mobility on the battlefield, and airborne landing parties, possessing operational mobility in the air, supplement each other well. [Ref. 28, p. 194]

[REDACTED] Two types of airborne operations are envisioned, helicopter assault and paratroop assault.

During the operation, wide use will be made of tactical and operational airborne landings. These will have the task of solving problems of the most effective use of the results attained by massed nuclear strikes--capture of the regions where nuclear weapons are located, important objectives, river crossings, bridgeheads, mountain passes, defiles, and the annihilation of strategic objectives which cannot be put out of commission in any other way. Helicopters will be used as the main means of dropping tactical airborne troops. Transport planes can be used for operational landings. To assure the landing of a large air-drop at a great depth the enemy air-defense must be neutralized by ECM, air operations, and rocket strikes.

A very complex problem in a modern war is the overcoming of zones with a high level of radioactive contamination. The probable enemy is prepared to create special barriers with surface nuclear explosions in the directions of the attacking troops. The radioactive contamination of the terrain is inevitable. Therefore, an advance will be hindered in a number of sectors because of high radiation levels and destruction. Zones with a high radiation level must be crossed by troops. When it is impossible to by-pass these zones they must be crossed in tanks and closed vehicles with the necessary shielding measures or overcome using helicopters and airplanes. [Ref. 27, pp. 293-294]

[REDACTED] The incentive is fourfold: the first is to make maximum use of the nuclear strikes.

[REDACTED]

The role of the airborne troops increased greatly with the appearance of nuclear missile weapons. This is determined first by the fact that they can quickly exploit the results of nuclear strikes by landing in the depth of the enemy dispositions. [Ref. 22, p. 50]

Under present conditions there are expanded capabilities for building up efforts through employment of airborne landings. Landed from helicopters in the depth of the enemy's defense right after nuclear strikes, they can make more rapid use of their results than ground troops, and can capture important areas, junctions of lines of communication, and crossings over water obstacles. They can hinder the approach of reserves and thus facilitate an increase in rates of the attack. [Ref. 22, pp. 149-150]

[REDACTED] Second, and closely related to the first, is to help achieve high rates of advance.

Offensive operations of a future war will be distinguished by high tempos.

An offensive should be mounted primarily on tanks, armored personnel carriers, and helicopters. [Ref. 27, p. 293]

There is no doubt that the use of airborne landings for purposes of consolidating results of the employment of nuclear weapons is one of the main ways to increase rates of advance. [Ref. 21, p. 193]

Airborne landings can be used very effectively to increase the rates of advance of the main grouping as it assaults water obstacles. Airborne landings are capable of capturing intact bridges, sectors of terrain on the opposite river bank, organizing places for assault and ferry crossings of motorized infantry, etc. To prevent the approach of enemy reserves to assault crossing sectors it is possible simultaneously to land parties in the deeper rear of the enemy. All this affords not only a rapid forcing of the water obstacle, but also swift development of the attack on the opposite bank without halts (pauses), which is of no small importance under modern conditions. [Ref. 21, p. 194]

[REDACTED] The third is to capture enemy nuclear weapons or otherwise prevent their employment.

[REDACTED]

There should be wide employment of airborne landings, the chief mission of which will be seizure and destruction of enemy nuclear means in the tactical and operational depth. [Ref. 21, p. 260]

[REDACTED] And, the fourth is to facilitate the crossing of zones of radiation and destruction expected to exist.

[REDACTED] The role and use of airborne landings has grown significantly.

Appearing in the interior, air landings will complete the disorganization of administration, frustrate the carrying out (by them) of nuclear strikes, prohibit the transfer of reserves of the enemy toward the troops attacking from the front, disrupt communications and fulfill other missions. The totality of all these actions, in essence, is expressed in opening in the enemy's rear of a new front. [Ref. 29]

The outfitting of modern tactical airborne landing forces with powerful weaponry and combat equipment permits them to perform various missions by the method of raids, to make surprise assaults on withdrawing and approaching enemy columns, control points, and rear service areas, and to cause panic in the enemy disposition. [Ref. 22, p. 173]

[REDACTED] The size of these operations is certainly not small:

Tactical airborne assault landings are employed for carrying out important combat tasks. In each specific case, their composition depends upon the nature of the impending operations, the depth of the landing operation, the offensive tempo of the forces, the degree to which the enemy's forces and weapons are neutralized, the number and types of helicopters allocated for the task and so forth.

A reinforced motorized rifle battalion is usually assigned to carry out a TVD [takticheskiy vozdushnyy desant; tactical airborne assault landing]. In the interest of improving its transportability, it will take along only that which is necessary for carrying out the task and thus it may be landed, for example, without motor vehicles, armored personnel carriers and those support subunits which do not participate directly in the battle. [Ref. 30, p. 203]

[REDACTED]

As pointed out by Dr. William F. Scott (Col. USAF Ret.) [Ref. 51], interest in helicopters and airborne forces as reflected in, for example, *Military Herald*, has been steadily growing from, in the example, three articles in 1967 to 21 in 1974. Further, Harriet Fast Scott has identified that the Soviets are now, for the first time, advertising in *Red Star* for individuals for what may be (helicopter) pilot training school.

Considerable concern has been voiced in Western literature about the vulnerability of forward deployed nuclear weapons to overrun by attacking Soviet Forces. Based on this examination of Soviet military literature, capturing the U.S./NATO nuclear warheads is certainly a top priority objective of the Soviet attack and a serious threat to NATO capability. However, the main form of the threat may not be the attacking tank armies as much as the airborne assault battalions, and whether the deployments are forward or rearward would seem to be a less important variable in determining vulnerability than, for example, NATO capabilities to detect and engage airborne assaults before they are landed and secured.

In examining the Soviet approach to combining conventional and nuclear capabilities, it is interesting to compare the manner in which they are combined in the Soviet dialogue with the manner in which they are combined in the United States. In the U.S., the basic approach has been one of technical integration from the bottom up. That is, to integrate the nuclear weapons at the lowest level possible (i.e., individual systems) and to disperse them throughout the forces. For the force to be nuclear capable, its weapons must be nuclear--hence, to avoid building a completely separate nuclear force, the weapons should be made dual capable. Integration/combination is approached starting with the individual weapons. In *The Offensive*, the approach is one of complementation of capabilities rather than integration. Nuclear weapons appear to be placed in dedicated units, they do not appear to be distributed around and, in general, they perform complementary roles. The integration/combination appears to be approached from a force structure point of view rather than from a weapons or technology point of view, in contradistinction to the U.S./NATO approach.

[REDACTED]

B. PROBLEMS AND VULNERABILITIES

[REDACTED] Although the concepts of operations appear to have been clearly thought out, to suggest that they will work or to attempt to measure the effectiveness of the strategy and tactics posed is an entirely different question because of the number of problems and inherent weaknesses that clearly exist and are evident to anyone who has been wrestling with the problems from the U.S. point of view. It is considered important to be quite careful in discussing these problems to recognize that the Soviet unclassified writings appear to be quite different from the U.S. writings in that they tend to adhere to a party line, to project objectives rather than realities, and to be much less open in their discussion of problems or weaknesses.

[REDACTED] Three problem areas inherent in the Soviet offensive include target acquisition, timing and command/control. These problem areas may introduce critical weaknesses into the offensive and are of much concern to the Soviets. The following discussion examines problems and weaknesses from the Soviet point of view and identifies potential vulnerabilities in the Soviet offensive.

1. Problems

[REDACTED] *The Offensive* is closely designed around a mass initial nuclear strike. In fact, this strike appears to be of crucial or decisive importance. If the strike does not accomplish its objectives and, in particular, its counternuclear objectives, the attack may well fail in an equally decisive manner. The success of the strike may very well be coupled to the ability of the tactical intelligence and target acquisition capability to direct the strike to the priority targets in a timely manner. The question is, is the capability adequate and, if serious problems do exist, are they adequately compensated for in one manner or another?

[REDACTED] The importance of tactical intelligence and target acquisition is repeatedly stated throughout *The Offensive*. For example:

[REDACTED]

The success of the battle against enemy tactical nuclear means depends first of all on the timely discovery of them by intelligence. Intelligence has the mission of establishing the places of disposition of means of nuclear attack, discovering the system for controlling them, disclosing warehouses for nuclear ammunition and points for their assembly, and checking on their destruction. Special trustworthiness and accuracy are required of intelligence data on means of nuclear attack. [Ref. 22, p. 135]

[REDACTED] The extent or comprehensiveness of the accuracy required is especially important. For example:

It is known that the *soyedinuniye* of U.S. ground forces have a large number of means of nuclear attack. However, this does not mean that each launcher or gun can have and employ a nuclear weapon at each given moment. The enemy may have considerably fewer such weapons than guns and launchers capable of delivering these weapons to the target. Therefore, it is very important to receive reliable data in good time not only about the location of the means of nuclear attack but also of the presence of nuclear ammunition with them. Of course, this is a difficult task but its accomplishment is necessary and possible. [Ref. 22, p. 135]

How "possible" it really is, is another matter entirely.

[REDACTED] The problem is clearly recognized if for no other reason than it is stated as a major problem recognized in the foreign press. For example:

It is considered [in the foreign press] difficult to determine the location of all objectives reliably and accurately for the launching of a simultaneous nuclear strike against them even with the presence of modern means of reconnaissance. And before destroying such objectives, final reconnaissance is required to refine their location. A portion of the objectives may be in motion or appear anew. Hence, the conclusion is drawn that one can hardly count on the fact that the attacker will succeed in destroying all important objectives with one simultaneous nuclear strike. In the course of the offensive it will often be necessary to launch nuclear strikes as the attacking troops advance and targets, are disclosed for destruction by nuclear weapons. [Ref. 22, p. 114]

[REDACTED]

The Soviets recognize that they also have a serious problem. "It should be assumed that it is not possible to accomplish completely the mission of destroying enemy means of nuclear attack." [Ref. 22, p. 137]

It does not appear to be possible by a long shot. This appears to be the rationale behind the importance attached to making destruction of the means of nuclear attack not just the first priority of the initial strike, but the first priority of all elements of the force.

An important quality of aviation is its capability to discover independently and immediately destroy enemy means of nuclear attack. [Ref. 22, p. 47]

The presence of the enemy's nuclear weapons, which are the principal means of destruction and the basis of the combat power of his troops, causes a need for constantly combatting means of nuclear attack by all available means and methods in a given situation. In contemporary conditions the outcome of battle depends on a successful solution of this problem. Therefore, reconnaissance of the enemy's nuclear means of attack and their immediate destruction constitute the main mission of troops in combat. [Ref. 20, p. 252]

The main objects of destruction of the artillery and aviation in the period of the fire preparation are enemy tactical means of nuclear attack, artillery, mortars, antiaircraft weapons, tanks, antitank guided missiles, personnel, control points, and various rear objectives. [Ref. 22, p. 119]

In the interests of the attacking troops, aviation can accomplish a wide span of missions. The most important of them is the destruction of the enemy's means of nuclear attack. [Ref. 22, p. 129]

The massive initial nuclear strike is not solely counternuclear as is often assumed (perhaps a tendency to mirror image the problem). Rather, it appears to be a fixed-target attack designed to destroy known or suspected nuclear targets; to create sufficient chaos and confusion through destruction of logistics, command/control, and major troop concentrations; and to open major breaches so that the shock ground forces can move to finish the counternuclear mission before NATO forces can recover.

[REDACTED]

Under conditions where nuclear weapons are employed, the breakthrough as a method for smashing the defending enemy and overcoming his defense will no longer have such decisive significance as formerly. The primary method of attack will be the *launching of nuclear strikes and the swift advance of tank and motorized rifle podrazdeleniye into the depth of the enemy's defense through the breaches formed by nuclear weapons.* [Ref. 22, p. 62]

[REDACTED] In reading the Soviet material, it may be important to recognize the following distinction between Soviet and U.S. practices. In the U.S., a major function of intelligence is the identification of fixed targets, troop concentrations, and enemy intentions; that is, it performs a target acquisition function that is rather slow paced. Target acquisition tends to be associated with a very time-sensitive process of acquiring and identifying a point target or a small collection of targets for immediate strike. Thus, the target acquisition problem is principally applied to the acquisition and strike of mobile and transient targets. The Soviet target acquisition problem for the initial strike appears to be minimized because their approach seems to be one of tying the initial strike to what would be referred to in the U.S. more as intelligence rather than target acquisition. The Soviet target acquisition "problem" is one of actively *seek out and destroy with direct fire*, which is the primary counternuclear function of the conventional combined arms forces.

[REDACTED] In addition to target acquisition, speed, pace, and timing, i.e., the rate of advance, in exploiting the results of the initial nuclear strike appear to constitute another key ingredient to the concept of operations and, as such, a potential Achilles heel. A picture is created of a highly orchestrated attack where all elements have precise missions that are to be carried out on an exact timetable.

Accomplishment of an assigned combat mission is regulated by a specific time. It is possible to defeat totally an enemy grouping and take the indicated line or region and still not accomplish the combat mission if this is done

[REDACTED]

late or inopportune. The assigned mission must be accomplished at precisely the time indicated. Delay leads to interruption of interaction with adjacent units and to a breakdown in plans which have been developed. It allows the enemy to accomplish a maneuver of men and materiel, to make counterattacks and deliver nuclear strikes, and to bolster his defense. Belated actions almost always are of a scattered and disorganized nature. Therefore, in the determination of the combat mission, the time of its accomplishment is calculated with the maximum possible precision, taking into account concrete conditions of the situation, and troops bend all efforts to ensure that the mission is accomplished on time. [Ref. 22, p. 72]

[REDACTED] If there is one problem with the Soviet approach, it is perceived to be the pace or speed with which they can actually exploit the attack. It is recognized that it is important not to overdesign the offensive.

Thus, the combat mission is the initial basis from which all subsequent work is done, both in organizing and in conducting the offensive. Performance of the combat mission serves as the basic criterion in evaluating the operations of troops. Therefore, a proper determination of the content and depth of combat missions is of the greatest importance. [Ref. 22, pp. 71-72]

A miscalculation in concentration of efforts or unskilled accomplishment of it under conditions of employment of nuclear weapons conceal a considerably more dangerous embryo of defeat, since a defending enemy possesses high mobility and great fire power. [Ref. 21, p. 229]

[REDACTED] The obstacles to precise planning in this rapidly changing environment are quite large.

While conducting the offensive at high rates, troops will not only have to complete the defeat of a defending enemy, but also pursue him, wage a meeting engagement, repulse counterattacks, force water obstacles, etc. In such a situation it is very difficult to provide ahead of time for concrete missions to defeat particular groupings of a defending enemy situated at a great depth. [Ref. 22, p. 80]

[REDACTED]

This, on top of vast areas of destruction, fire, floods, and contamination, does not appear to be particularly consistent with the rapidity, coordination, and precise scheduling that they maintain must be met. Recognizing the severe problems posed by Murphy's Law (which judging from Czechoslovakia, is as applicable to the Soviet Union as to the U.S.), how does one organize so as to pull off this massive orchestrated exploitation?

[REDACTED] While the Soviet concept of operations recognizes the need for increased independence at the lower command levels, this is provided through increased planning details, mission assignments, timetables, etc. The Soviet system can easily end up unable to cope with the serious problem of uncertainty. Confusion and uncertainty may be as important a characteristic of the battlefield as radiation and destruction and one that the operations might well be designed to live within. There are many facets of the battlefield that are not subject to test or training and will need to be learned on the spot. The impact of such variables as EMP, fire, flood, and non-immediate incapacitating radiation casualties are still largely not recognized in the Soviet literature. The Soviet approach appears to be least flexible in this regard. Should any of the basic planning assumptions, such as system reliability, military impact of the first strike, troop reliability (particularly Pact allies), command/control integrity, and so forth, fail to hold as planned, a coherent plan might well become instantaneously incoherent and disastrous, with units creating mammoth traffic jams and the best possible nuclear targets of precisely the type that the offensive was designed to avoid. The advantage might well pass to the side that carefully husbands resources and proceeds cautiously rather than abruptly and headstrongly.

[REDACTED] The approach taken in *The Offensive and Operational Art and Tactics* is believed to be one of minimizing the problem by clearly separating, as indicated earlier, the nuclear portion from the combined arms portion. Thus, the combined arms forces operate very similarly to the way they did in the past with the exception of disposition for initial attack and the

[REDACTED]

assignment of combat missions and objectives, i.e., the tempo of the individual troops.

[REDACTED] Their planning encounters two strongly opposing forces: one which says go as fast as possible or you'll be destroyed by the opposition's nuclear weapons; the other which says do not plan above your capabilities or you are equally doomed to confusion and defeat. Precisely at what speed they expect to operate and whether or not this is realistic is a question worthy of considerable future examination.

[REDACTED] Command/control/communications or, more precisely, *battle management*, has grown in importance and capabilities to such an extent that there is a growing tendency to refer to the 1950s/1960s as the nuclear revolution and to the 1960s/1970s as the cybernetic revolution. The central role established for these capabilities in the Soviet material is clear in spite of the severe restrictions that appear to limit its discussion for what are probably security limitations. The material that is included emphasizes the need for positive political control:

...owing to the "tremendous destructive capabilities" of modern weapons, they cannot remain "outside political control." [Ref. 32, p. 112]

...training of personnel for the hardships of a nuclear war it is essential to emphasize the social and moral responsibility of personnel for their assigned task, because today the price of an irresponsible action even by a single individual is too high. [Ref. 33, p. 195]

...the strategic leadership for the first time in military history obtained its own means of destruction, by massive application of which it is possible directly to accomplish major strategic missions, creating favorable conditions for carrying out operations and battles on the land and naval theaters and changing their character. [Ref. 20, p. 6]

[REDACTED] Regarding the attack, the ability to manage a continuously changing target set is also essential, as indicated previously in the discussion of tactical intelligence and target acquisition and, tying in command/control,

[REDACTED]

In contemporary combat success in the control of troops can be expected only if it is flexible and ensures quick reaction to sudden changes in the situation. For instance, between the time it is decided to make a nuclear strike on the enemy and the moment when the warhead detonates above the chosen target the target can change position, and if the decision is not altered immediately before the strike, effective results cannot confidently be expected. Or let us take another example. The application of a nuclear weapon can quickly change the balance of the forces and means of the opposing sides and can make an attack in the planned direction unprofitable. In this situation a quick change of the previous decision and the transfer of efforts to a new area is required. [Ref. 20, p. 63]

[REDACTED] Once the war starts, the emphasis swings to accommodate limitations in the survivability of command/control/communications:

Under conditions of nuclear-missile war the achievement of continuity of control is greatly hampered. However, in spite of this the commander and the staff cannot permit even brief interruptions in the leadership of the troops. [Ref. 20, p. 63]

[REDACTED] And, in line with the increased emphasis on speed is an increase in emphasis on the mobility of control.

Mobility of troops largely depends on the methods of their control. The great dynamic nature of troop combat operations in the attack, the massive employment of nuclear weapons by both sides, swift and abrupt changes in the situation, and the participation of different combat arms and branches of the armed forces--all this demands a sharp increase in mobility of troop control. A most important indicator of mobility of control is the ability of commanders and staff to comprehend a complex situation quickly and deeply, make the most advisable decision without delay, bring it to the attention of subordinates in the shortest time, and continuously and firmly direct the actions of troops in the interests of successful accomplishment of the combat mission. [Ref. 21, pp. 184-185]

[REDACTED] In accomplishing all this, it is clear that the Soviets appear to be headed in the direction of making considerable use of science and technology as applied to command/control.

[REDACTED]

The military commander has begun to resemble more a scientist at the control panels and radio station consoles than a general of the manufactory period who drew the reserve cavalry regiment into the attack behind himself at minutes of crises in combat. [Ref. 21, p. 186]

To what extent this was motivated by foreign military development is unsure; however, the Soviets are indeed aware of what, for example, the U.S. is doing [Ref. 21].

[REDACTED] The approach that appears to have been taken is therefore:

- Very tight political control of the weapons prior to the initiation of hostilities. The two main reasons are to control from the top and to preserve surprise.
- Rapid and extensive preplanning of operations recognizing that command/control may be lost for some time following the initial exchange.
- Subordination of nuclear weapons to the operational commanders at the initiation of hostilities.

[REDACTED] This is not seen to be decentralized. Rather it is preplanned, not only in terms of the nuclear strike but also in terms of the exploitation. Although the system may be flexible prior to the onset of hostilities, it appears to be potentially inflexible following the onset. As regards coordination between the combined arms forces and the nuclear strike forces, as indicated earlier, the primary mechanism appears to be the assignment of areas for strike that the combined arms forces are well advised not to penetrate before H hour. In terms of interaction between the conventional forces and the nuclear forces, there appears to be very little indication of coordination, with a few exceptions. One of the few examples of such coordination is "There is an especially precise organization of troop warning about time of delivery of nuclear strikes in order to take timely steps necessary for protection against the blinding action of light radiation." [Ref. 22, p. 202] This, however, only applies to strikes at night.

[REDACTED] In the cybernetic revolution, the Soviets appear to be moving to automate much of the planning process. This includes target set management and weapon assignment, logistics and resupply planning, programming

[REDACTED]

of goals/objectives for various missions, and so forth. The use of computers increases the speed with which plans can be formulated and changed as the situation changes. Although one can view this as increasing the flexibility of the force, it can also lead to great inflexibility and problems because, for example, the data base and algorithms are based on conventional war, and because bugs in programs have a habit of appearing at the least opportune time. The ability to debug and exercise such a capability is extremely limited. One simple example of this is the problem of testing the impact of EMP on command/control/communications. Although there is considerable support for the cybernetic revolution in the Soviet literature, there are also indications of concern that they may have gone too far in automating the command/control and decision process.

[REDACTED] As can be seen, command/control, as in the case of intelligence, is recognized as a key and critical portion of the military capability. In reading the Soviet literature, however, one is struck with the impression that it remains a significant problem area and that the Soviets may be developing second thoughts about the cybernetic phase of their revolution. As in the case of timing, one of the severe problems appears to be the dilemma where, on one hand, they are forced into an advanced orchestration and greatly decentralized command/control, while on the other hand they are faced with the need to respond to rapid and acute changes of circumstances which, in turn, argues for a strongly centralized command/control structure. The Soviet approach appears to put its faith in preplanning. Whether this will lead to flexibility or inflexibility is unclear at this point in time, although the analysis to date tends toward interpreting the approach as favoring continuity and centralized control at the expense of flexibility.

2. Vulnerabilities

[REDACTED] As indicated earlier the Soviet objectives in the event of a war in Europe are, first, to secure the gains already achieved (e.g., Eastern Europe) and, second, to seize and hold new territory (e.g., Western Europe) and in the process destroy the threatening force elements (regionally located land, sea, and air forces). The two key force elements are the ground

[REDACTED]

forces to seize and hold the territory, and the nuclear delivery units to destroy the hostile force elements. Insofar as the defense of Europe is concerned, the most important of these is the ground forces. This is clearly recognized by the Soviets, and much of their approach to the design of their offensive is developed with this in mind. The ground forces are the key to the Soviet offense, nuclear and non-nuclear, and to defeat the Soviet strategy, one must first destroy their ground force offensive concept. In one sense, this may be particularly fortunate for NATO and frustrating for the Soviets because it, the offensive concept, is also the heart of the most serious weaknesses in the Soviet concept and appears to be very vulnerable into NATO nuclear counteractions, a condition that is also recognized by the Soviets.

In connection with advances in military hardware, the content of the term "defense" also encompasses a number of new elements. Employment of nuclear weapons in the defensive operation and engagement increases the stability of defense and enables the defending force to mount heavy strikes against the opposing enemy force even before the attack begins. There is now greater potential for stopping an offensive in its tracks or substantially weakening the attack and destroying the attacking force in the course of defensive operations. [Ref. 33, pp. 106-107]

[REDACTED] The key attributes of the Soviet offensive concept, as described earlier, are surprise, attack from the march, and rapid exploitation. The three elements critical to the success of their concept are the troops (tank and motorized infantry), mobility, and command/control. These same three elements are also very vulnerable to the effects of nuclear weapons--troops to radiation, mobility to blast, and command/control to radiation, blast, and EMP.

[REDACTED] The vulnerability of troops, in or out of vehicles, to nuclear attack is appreciated by the Soviets. Troops are very vulnerable to radiation and when troops are concentrated, nuclear weapons are a most efficient and effective way to destroy large numbers of troops, which traditionally

[REDACTED]

has been a Soviet strength. This was, in fact, a major part of the rationale behind the early U.S. theater nuclear deployments, as discussed in Section II of this report.

[REDACTED] The fact still remains, when concentrated, troops are a very lucrative nuclear target, and the Soviets still see concentration as essential in the attack. The problem appears to exist in two major areas: concentrations for an attack and inadvertent concentrations that result from poor planning or that result when choke points such as critical mobility features (bridges, road, etc.) are attacked. The former area is principally the problem of front line units and the latter area is principally a second echelon or immediate reserves problem.

[REDACTED] In both cases, nuclear weapons are most effective singly against platoons and companies and in mass against battalions, brigades and divisions.

Single nuclear attacks will be launched, depending on the weapon yield, against corresponding tank units. A superlow- (low)-yield nuclear missile can destroy a tank platoon (company) and one of medium yield--a tank company (battalion).

A group nuclear attack can also, depending on the yield of the missiles or bombs, inflict heavy losses on the tanks of a tank battalion, armored or motorized infantry brigade and even division.

A massed nuclear attack of scores of nuclear weapons can inflict a decisive defeat on a tank group consisting of several armored or mechanized (motorized infantry) divisions and break up their offensive. The use of a large number of nuclear weapons of medium and large calibres in a massed attack may result in the rout of large tank groups and paralyze the actions of enemy army corps and field armies. This method of mass (group) destruction of tanks, or, to be exact, whole tank units and formations with their tanks, nuclear attack weapons and all other weapons, is decisive. [Ref. 34, p. 105]

[REDACTED] What is particularly interesting is the Soviet's focus on the problem of second echelon forces. Consider, for example:

[REDACTED]

Decisive destruction is now inflicted on an advancing enemy mainly by nuclear strikes, fire of all forms of weapons, and also by forces and means in the rear defense.

The mission of the first echelon is to inflict losses on the active force and material of the enemy, to hold important regions, to delay the advance of the enemy and to create favorable conditions for his destruction by nuclear weapons and counterattacks of the second echelon (reserve).

The main purpose of the second echelon (reserve) is to complete the destruction of an enemy break-in in a previously selected region by using results of nuclear strikes.

Consequently, the mission which previously was of secondary importance for the second echelon (reserve) now becomes a mission of paramount importance. [Ref. 20, p. 217]

and,

Thus mass (group) destruction of enemy tanks by means of nuclear weapons before the enemy main striking group has entered the battle is the supreme form of fighting activity and ensures achievement of the decisive aim--victory in the shortest possible time and with the minimum expenditure of manpower and material resources. [Ref. 35, pp. 106-107]

[REDACTED] Mobility is essential to rapid exploitation, and appears to be a dominant consideration in selecting the main avenues of attack; that is, the avenues of attack are selected with the mobility required by the second-echelon and reserve units foremost in mind. Soviet appreciation and concern for the effects that nuclear weapons can have on troop mobility are reflected in their plans to use nuclear weapons against NATO forces to isolate the battlefield and destroy the mobility required to move up reinforcing units and, at the same time, produce choke points that will cause unwanted troop concentrations to develop, thus introducing additional lucrative targets. Their concern is also reflected in the emphasis they place on river crossing capabilities.

[REDACTED] The use of nuclear weapons to destroy mobility appears to be a second major opportunity to destroy the Soviet offensive strategy. This

[REDACTED]

is a particularly lucrative target set because a packaged mobility interdiction attack can be largely preplanned against fixed targets fairly close to the border, keyed to easily available intelligence, and not require target acquisition as such.—

[REDACTED]

[REDACTED] A point not considered in the mobility impairment study of Reference 36 is that the NATO nuclear strikes would not only destroy the selected interdiction targets but would also destroy the critical timetable so important to the Soviet concept of operations, a benefit that cannot be assessed until credible force movement and coordination models, including detailed activity plans, have been developed.

[REDACTED] Another collateral benefit that cannot be assessed at the present time is the effect of the nuclear interdiction strikes on the airborne assault forces which would be underway after the initial strike. Personnel in these assault forces would be vulnerable to flash blindness at great distances. Also, in flight aircraft, fixed and rotary wing, are relatively soft to blast effects. Continuation of the nuclear strikes, after the initial interdiction strikes, targeted at personnel and materiel forced to mass at these choke points would cause massive disruption of second-echelon forces.

[REDACTED] Such targets as those indicated above should be additionally lucrative because the lead mobility interdiction attack may provide the side benefit of disabling the netting and radar control associated with the forward battlefield air defenses, as well as disabling most of the command/control associated with the forward divisions.

[REDACTED] As indicated earlier, the Soviet concept has placed very heavy demands on command/control, which, in turn, had led to the use of capabilities that are also highly vulnerable to nuclear weapons effects, particularly EMP.

[REDACTED] As can be seen, simple mobility impairment studies do not reflect the full impact of a few NATO interdiction strikes. An as yet unknown multiplier must be applied to the calculated delay to account for time required for the Soviets to replan the attack that was so closely planned and coordinated at the start of the offensive.

[REDACTED] This discussion would be inappropriate without some examination of critical vulnerabilities of the Soviet nuclear strike. Based on the preceding material, it is not believed that Soviet nuclear delivery systems should be a first priority target for NATO--only the associated command/control should be a high priority target. The reason for this is that first, the main way to counter the Soviet nuclear strike is by dispersal of one's own forces, thus greatly exacerbating his target acquisition problem, which he already recognizes as a major weakness. Second, if the strike has been launched, one is wasting weapons on non-targets. Third, if the strike has not been launched, the Kremlin will probably exercise tight control and may not launch a major strike if they perceive NATO's strike to be limited and not jeopardizing their nuclear strike force and if the NATO strike has seriously degraded their exploitation forces and has, in effect, made it temporarily impossible to exploit the strike. And fourth, a strike against the nuclear delivery forces in Eastern Europe is only marginally effective if much of the strike force is based in the Soviet Union. Finally, the ground forces represent the immediate threat to the loss of Western Europe.

[REDACTED]

The nuclear strike means represent only a finite number of DGZ's which need not imply the end of Western Europe if the defense forces are properly postured and hidden.

[REDACTED]

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